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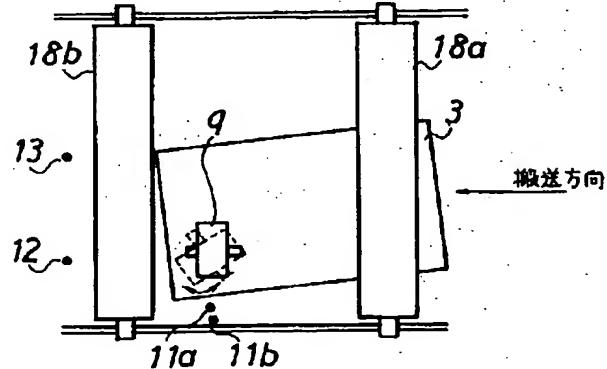
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(54)【発明の名称】帳票の傾き修正機構

(57)【要約】

【目的】 大きく傾斜して搬送された帳票に対し、高精度の傾き修正を安定に行う。

【構成】 帳票3の傾きをセンサ12、13で測定し、測定結果に基づき、幅寄せローラ9を駆動後、ドライブローラ17a、17b間で帳票3を撓ませ、帳票3の先端をプレッシャローラ18b、ドライブローラ17bの噛み合わせ部に当接し、帳票3の傾きを修正する。



【特許請求の範囲】

【請求項1】 平行に配置された、独立駆動可能な2本のドライブローラと、各該ドライブローラに対向して配置された、2本のプレッシャーローラと、前記ドライブローラとは独立に駆動され、帳票搬送面に対し任意の角度で圧接／解除可能な幅寄せローラと、搬送された帳票の傾き量を測定する手段とを備え、

該測定手段により測定された帳票の傾き量に応じて、前記幅寄せローラの角度と回転方向と回転量を決め、該幅寄せローラにより帳票を搬送路側端に移動させ傾きを所定量以下に修正した後、前記2本のドライブローラ間で帳票を撓ませ、該帳票の先端側のドライブローラの噛み合わせ部に該帳票先端を当接させて該帳票の傾きを修正するように構成したことを特徴とする帳票の傾き修正機構。

【発明の詳細な説明】**【0001】**

【産業上の利用分野】 本発明は、例えばOCR、イメージリーダ等、帳票を正確な位置に搬送する必要のある装置における帳票の傾き修正機構に関する。

【0002】

【従来の技術】 従来、帳票の傾き修正機構としては、特公昭62-38261号公報に記載されているように、平行に配置された2本のドライブローラにおいて、搬送方向側のドライブローラを当該紙葉の先端が通過後、搬送方向に対し逆回転させ、同時に後側ドライブローラを停止させ、2本のローラ間で紙葉を撓ませ、紙葉先端をドライブローラの噛み合わせ部に当接させ、紙葉の傾きを修正する方式が知られている。上記方式は、簡単な構成で帳票の傾きを修正可能であるが、搬送された帳票の傾き角が大きい場合には修正しきれず、帳票に皺等を発生させるという問題があった。また、帳票の搬送方向と直角方向の位置決めを行うことについては配慮がなされていなかった。

【0003】

【発明が解決しようとする課題】 上記従来技術は、帳票の傾き角が約1度程度のものを0.1度程度へ傾きを修正可能な優れた方式であるが、修正前破傾き角が大きいと、ローラ間で撓ませた帳票の両端で撓み量の差が大きくなり、撓み量の小さい端部側では帳票先端がローラ噛み合わせ部に当接せず補正が不可能となってしまう。そのため、従来方式による傾き修正の前に帳票の傾きを一定量以下にすることが必要である。一方、傾き修正の他の方式として、幅寄せローラで帳票側面を基準面に押し当てる方式が知られており、この方式を前述の方式の前にに行うことが考えられる。この2方式を併用すると、帳票の横方向の位置決めも可能になる。この方式において、ローラで帳票を基準面に押し当てる場合、扱う帳票が一種類の場合はローラの位置を帳票の中央にし、基準面に直角に押し当てることが可能であるが、多種類の大

きさ、厚さの帳票を扱う場合、帳票の重心位置、搬送抵抗がそれぞれ異なるため、同一条件で幅寄せを行うと、傾きを増大させたり、帳票を左端に押し当て過ぎてジャムを発生させたりするという問題がある。本発明の目的は、このような問題点を改善し、傾き量の大きい帳票に対しても安定な傾き修正機構を提供することにある。

【0004】

【課題を解決するための手段】 上記目的を達成するため、本発明の帳票の傾き修正機構は、幅寄せローラ（図1の9）の角度を任意に設定可能とし、搬送された帳票の傾きをセンサ（図1の11a、11b、12、13）にて測定し、測定値により幅寄せローラの角度と回転方向と回転量を制御し、幅寄せローラによる帳票の搬送路側端への移動および傾き修正を行った後、さらに2本のドライブローラ（図1の17a、17b）間で帳票を撓ませ、その先端をドライブローラの噛み合わせ部に当接させて傾き修正するように構成したことに特徴がある。

【0005】

【作用】 本発明においては、センサにて、搬送された帳票の傾きを測定し、その測定値に従い幅寄せローラの回転方向と角度と回転量を制御し、2本のドライブローラ間での傾き修正を行う前に、幅寄せローラにて帳票の傾きと左右方向位置を一定範囲内にする。これにより、傾きの大きい帳票を安定に傾き修正することができる。また、幅寄せローラの駆動を側端に寄せる動作と傾きを修正する動作を分けて駆動することにより、確実に帳票を左右方向の位置決めを実施し、大きな帳票の傾き修正が実施でき、安定な傾き修正が可能となる。なお、幅寄せローラにより帳票を側端に寄せるとき、側端を検出するセンサを設け、側端を検出するまで幅寄せローラを帳票搬送方向に直角に駆動することにより、基準ガイド（あるいは搬送路側端）に押し付けた場合に発生する危険のある帳票側端部の折れ等の不具合を防止できる。この幅寄せローラは、帳票搬送方向および帳票搬送方向と直角方向の少くとも二つの角度に設定可能とし、平行に配置したドライブローラ間に設ける。また、センサにて、搬送された帳票の長さを検出し、帳票の長さの中央箇所で幅寄せローラを帳票搬送方向に直角に設定し、帳票側端を基準面に押し当てる後、帳票の傾き量を測定し、その測定値に従って幅寄せローラの角度と回転方向と回転量を決めて帳票を移動させた後、2本のドライブローラ間で帳票の傾き修正を行う。これにより、異なるサイズの帳票に対応することが可能である。また、幅寄せローラの設定角度と回転方向と回転量は、搬送される帳票ごとに設定する。あるいは、幅寄せローラにより帳票を動かした後、再度帳票の傾きを測定し、幅寄せローラによる移動前後の帳票傾き量を計算し、計算結果に従って、幅寄せローラの角度と回転量の設定値を修正する。これにより、多種類の帳票に対応でき、常に適正な傾き修正を行うことが可能である。

(3)

特開平8-268600

3

【0006】

【実施例】以下、本発明の一実施例を図面により説明する。図1は、本発明の第1の実施例における帳票の傾き修正機構を示す平面図、図2はその側面図である。まず構成について説明する。本実施例の機構は、ドライブローラ17a、17bと、それに対向するプレッシャローラ18a、18bと、幅寄せローラ9と、帳票の傾き量を検出するセンサ12、13と、用紙ガイド1a、1b、2、3a、3bと、帳票の左端を検出するセンサ11a、11bより構成される。プレッシャローラ18a、18bは、それぞれ押圧解除手段(図示せず)によりドライブローラ17a、17bから持ち上げることができる。また、ドライブローラ17a、17bは、モータ等の駆動手段(図示せず)により独立駆動可能に構成されている。幅寄せローラ9は、前記ローラ17a、17b、18a、18bとは独立に駆動し、幅寄せローラ上下駆動機構(図示せず)により搬送面に圧接させることができ、また、幅寄せローラ回転機構(図示せず)により帳票搬送方向に対して回転可能に構成されている。

【0007】次に、本実施例の動作について説明する。本実施例では、帳票3をセンサ12、13位置まで搬送し、センサ12、13により帳票3の傾き量を測定する。そのとき、帳票3の左端が左端検出センサ11a、11bの間にあり、傾き量が設定値(最終的に傾き修正により要求される値)以下の場合は、帳票をそのまま搬送する。また、傾き量が2本のドライブローラ間で帳票を撓ませて傾きの修正が可能な範囲(予め設定した値)なら、幅寄せローラを動作させずに、帳票3を一定量逆送した後、ドライブローラ17aを停止させ、ドライブローラ17bを逆転させることにより、ドライブローラ17a、17b間で帳票3を撓ませ、帳票先端をドライブローラ17bとプレッシャローラ18bの噛み合わせ部に当接させて、傾き修正を行う。その後、帳票3を搬送する。このとき、さらにセンサ12、13により傾き量を測定し、設定された傾き量より大きい場合、帳票3の撓ませ動作を一定回数リトライしてもよい。また、搬送された帳票3が左端検出センサ11a、11b間にない場合、または、傾き量が上記よりも大きい場合には、幅寄せローラ9を帳票搬送方向に対して一定角度の傾きに設定し、帳票3に圧接し、帳票3が左端検出センサ11a、11b間に至るまで搬送する。この時の幅寄せローラ9の設定角度は帳票3の傾きに対して予め設定された角度であり、帳票3の傾き量を小さくする角度に設定される。この動作により、傾きの大きい帳票は一定角度以下にすることができ、この後、2本のドライブローラ間で前記と同様に傾き修正を実施する。

【0008】図3、図4は、本発明の第2の実施例における帳票の傾き修正機構の平面図および側面図である。第1の実施例では、左端側への幅寄せ位置決めをセンサ

にて行ったが、本実施例では、図3に示す左端基準面20を設け、左端基準面20に帳票3を押し付けて幅寄せローラ9による傾き修正を行ってもよい。また、幅寄せローラ9による傾き修正時、まず、幅寄せローラ9を帳票搬送方向と直角方向にして左端基準面20に押し当てた後、センサ12、13で帳票3の傾き量を測定し、予め設定した傾き量以上であれば、幅寄せローラ9を帳票搬送方向と平行方向に回転し、傾きに応じて傾き量が小さくなる方向に幅寄せローラ9を設定量回転させた後、2本のドライブローラ間で傾きの修正を実施する。左端基準面20に帳票3を押し当てる場合、帳票3の長さを検出し、幅寄せローラ9が帳票長さの中央で圧接し搬送することにより、幅寄せ時の傾き発生を小さくすることが可能である。

【0009】なお、上記実施例において、帳票3の傾きを修正するための幅寄せローラ9の角度と回転量は、帳票の大きさ、厚さ等の物理的条件により変わるため、帳票の種類により設定を行えば、常に適正な傾き修正が可能となる。具体的には、本機構を組む装置は、複数のホッパから選択的に自動給紙を行う装置であるため、ホッパ毎にその帳票の傾きに対する幅寄せローラ9の角度と回転量を登録しておけばよい。この登録した値を図5に示すフローチャートに従って修正することにより、常に適正な幅寄せローラ9の駆動条件が得られる。つまり、幅寄せローラ9による幅寄せを行った後、再度センサ12、13により帳票3の傾き量を測定し(ステップ501～503)、傾き量が基準値に入っていない場合には(ステップ504のNO)、現在の幅寄せローラの駆動条件に、新しく測定した傾き量を修正するのに相当する幅寄せローラの回転量、角度を加えたものを新しい幅寄せローラの駆動条件とする(ステップ504)。

【0010】

【発明の効果】本発明によれば、大きな傾きで搬送された帳票に対し高精度の傾き修正を安定に行うことができる。

【図面の簡単な説明】

【図1】本発明の第1の実施例における帳票の傾き修正機構の平面図である。

【図2】図1の側面図である。

【図3】本発明の第2の実施例における帳票の傾き修正機構の平面図である。

【図4】図3の側面図である。

【図5】本発明の一実施例における幅寄せローラの駆動条件修正方法を示すフローチャートである。

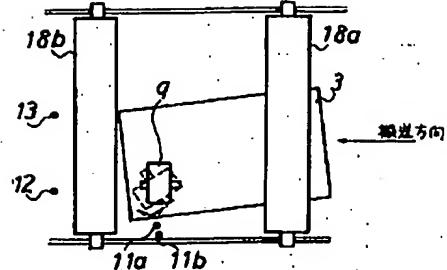
【符号の説明】

1a、1b、2、3a、3b：用紙ガイド、3：帳票、9：幅寄せローラ、11a、11b、12、13：センサ、17a、17b：ドライブローラ、18a、18b：プレッシャローラ、20：左端基準面。

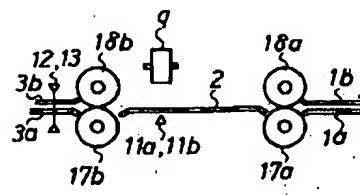
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特開平8-268600

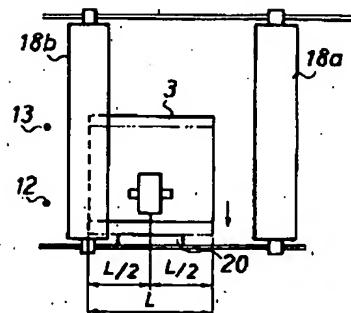
【図1】



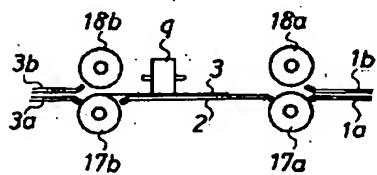
【図2】



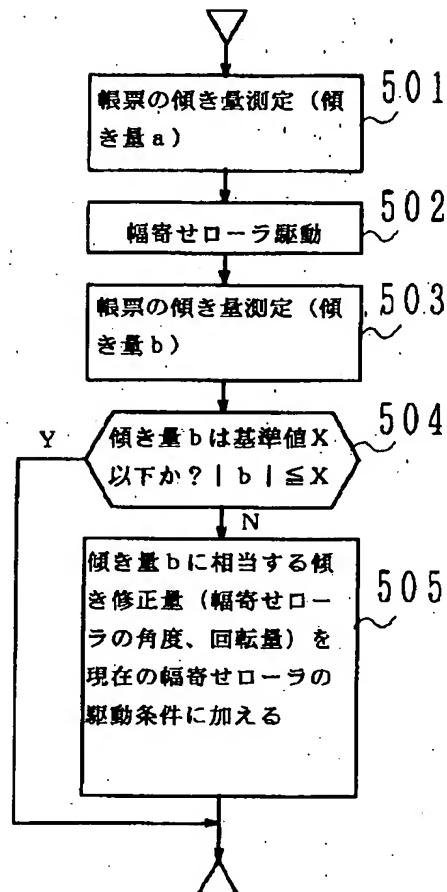
【図3】



【図4】



【図5】



DOCUMENT INCLINATION CORRECTING MECHANISM

Patent Number: JP8268600

Publication date: 1996-10-15

Inventor(s): NAKATSU AKIJI

Applicant(s): HITACHI LTD

Requested Patent: JP8268600

Application Number: JP19950080037 19950405

Priority Number(s):

IPC Classification: B65H9/16; B65H7/08

EC Classification:

Equivalents:

Abstract

PURPOSE: To stably correct an inclination with high accuracy in a document carried by being greatly inclined.

CONSTITUTION: An inclination of a document 3 is measured by sensors 12 and 13, and after an edge aligning roller 9 is driven on the basis of a measured result, the document 3 is bent between drive rollers 17a and 17b, and the tip of the document 3 is brought into contact with a meshing part of a pressure roller 18b and the drive roller 17b, and the inclination of the document 3 is corrected.

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(21)Application number : 07-080037 (71)Applicant : HITACHI LTD

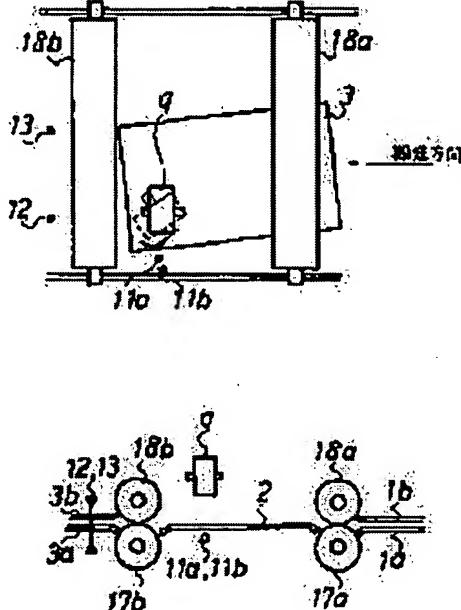
(22)Date of filing : 05.04.1995 (72)Inventor : NAKATSU AKIJI

(54) DOCUMENT INCLINATION CORRECTING MECHANISM

(57)Abstract:

PURPOSE: To stably correct an inclination with high accuracy in a document carried by being greatly inclined.

CONSTITUTION: An inclination of a document 3 is measured by sensors 12 and 13, and after an edge aligning roller 9 is driven on the basis of a measured result, the document 3 is bent between drive rollers 17a and 17b, and the tip of the document 3 is brought into contact with a meshing part of a pressure roller 18b and the drive roller 17b, and the inclination of the document 3 is corrected.



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[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's
decision of rejection]

[Date of requesting appeal against examiner's
decision of rejection]

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CLAIMS

[Claim(s)]

[Claim 1] Have the following and an angle, a hand of cut, and a rotation of said ***** roller are decided according to the amount of inclinations of a document measured by this measurement means. After moving a document to a conveyance road-side edge with this ***** roller and correcting an inclination below to the specified quantity, An inclination corrector style of a document characterized by constituting so that a document may be sagged between said two drive rollers, this document tip may be made to contact the tabling section of a drive roller by the side of a tip of this document and an inclination of this document may be corrected. Two drive rollers which have been arranged in parallel and which can be driven independent Two pressure rollers which countered each ** drive roller and have been arranged It drives independently of said drive roller, and is the ***** roller in which a pressure welding/discharge at an angle of arbitration are possible to a document conveyance side. A means to measure the amount of inclinations of a conveyed document

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the inclination corrector style of the document in equipment with the necessity of conveying documents, such as OCR and an image reader, in an exact location.

[0002]

[Description of the Prior Art] Conventionally, as an inclination corrector style of a document, as indicated by JP,62-38261,B In two drive rollers arranged in parallel After the tip of the paper leaf concerned passing the drive roller by the side of the conveyance direction, Carry out inverse rotation to the conveyance direction, make coincidence stop a backside drive roller, sag paper leaf between two rollers, a paper leaf tip is made to contact the tabling section of a drive roller, and the method which corrects the inclination of paper leaf is learned. Although the above-mentioned method could correct the inclination of a document with the easy configuration, when the angle of inclination of the conveyed document was large, it could not be corrected, and had a problem of making a document generate a wrinkle etc. Moreover, consideration was not made about performing positioning of the conveyance direction of a document, and the direction of a right angle.

[0003]

[Problem(s) to be Solved by the Invention] It bends at the both ends of the document by which that whose angle of inclination of a document is about 1 time was sagged between rollers when ***** before correction was large, although it is the outstanding method which can correct an inclination to about 0.1 degrees, and the difference of an amount becomes large, in the edge side where the amount of bending is small, a document tip will not contact the roller tabling section, but amendment of the above-mentioned conventional technology will become impossible. Therefore, it is required before the inclination correction by the conventional method to make the inclination of a document below into a constant rate. On the other hand, the method which presses the document side against datum level is learned for the ***** roller as other methods of inclination correction, and it is possible to hold this method before the above-mentioned method. If these two methods are used together, positioning of the longitudinal direction of a document will also be attained. Although it is possible to carry out the location of a roller in the center of a document, and to press against a right angle in datum level when the number of the documents treated in this method when pressing a document against datum level with a roller is one When treating the magnitude of varieties, and the document of thickness and ***** is performed on the same conditions since the center-of-gravity location of a document differs from conveyance resistance, respectively, there is a problem of increasing an inclination, or pressing a document against a left end too much, and generating a jam. The purpose of this invention improves such a trouble and is to offer a stable inclination corrector style also to a document with the large amount of inclinations.

[0004]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, an inclination

corrector style of a document of this invention an inclination of a document conveyed by enabling a setup of an angle of a ***** roller (9 of drawing 1) to arbitration -- a sensor (11a of drawing 1 --) Measure in 11b, 12, and 13 and an angle, a hand of cut, and a rotation of a ***** roller are controlled by measured value. The feature is to have constituted so that a document might be sagged between two more drive rollers (17a, 17b of drawing 1), the tip might be made to contact the tabling section of a drive roller and inclination correction might be made, after making migration at a conveyance road-side edge and inclination correction of a document with a ***** roller.

[0005]

[Function] In this invention, before measuring the inclination of the document conveyed by the sensor, controlling the hand of cut, angle, and rotation of a ***** roller according to the measured value and making the inclination correction between two drive rollers, the inclination and longitudinal-direction location of a document are carried out within fixed limits with a ***** roller. Thereby, the inclination correction of the document with a large inclination can be made at stability. Moreover, by dividing and driving the actuation which brings near the drive of a ***** roller by the side edge, and the actuation which corrects an inclination, a longitudinal direction is certainly positioned for a document, inclination correction of a big document can be made, and stable inclination correction is attained. In addition, when bringing near a document by the side edge with a ***** roller, faults, such as a crease of the document side edge section with risk of generating, when it pushes against a criteria guide (or conveyance road-side edge) by driving a ***** roller at a right angle in the document conveyance direction until it forms the sensor which detects a side edge and detects a side edge, can be prevented. This ***** roller enables a setup at at least two angles of the document conveyance direction and the document conveyance direction, and the direction of a right angle, and is formed between the drive rollers arranged in parallel. Moreover, after measuring the amount of inclinations of a document, deciding the angle, hand of cut, and rotation of a ***** roller according to the measured value, after having detected the length of the conveyed document, setting the ***** roller as the right angle in the document conveyance direction in the part of the center of the length of a document and pressing a document side edge against datum level by the sensor, and moving a document, inclination correction of a document is made between two drive rollers. It is possible for this to deal with the document of different size. Moreover, the setting angle, hand of cut, and rotation of a ***** roller are set up for every document conveyed. Or after moving a document with a ***** roller, the inclination of a document is measured again, the amount of document inclinations before and behind migration with a ***** roller is calculated, and the angle of a ***** roller and the set point of a rotation are corrected according to a count result. It is possible to be able to respond to the document of varieties and to make always proper inclination correction by this.

[0006]

[Example] Hereafter, a drawing explains one example of this invention. The plan and drawing 2 which show the inclination corrector style of a document [in / in drawing 1 / the 1st example of this invention] are the side elevation. A configuration is explained first. The device of this example consists of drive rollers 17a and 17b, the pressure rollers 18a and 18b which counter it, the ***** roller 9, sensors 12 and 13 which detect the amount of inclinations of a document, form guides 1a, 1b, 2, 3a, and 3b, and sensors 11a and 11b which detect the left end of a document. Pressure rollers 18a and 18b can be lifted from drive rollers 17a and 17b with a press discharge means (not shown), respectively. Moreover, drive rollers 17a and 17b are constituted by the driving means (not shown) of a motor etc. possible [an independent drive]. The ***** roller 9 can be driven independently [said rollers 17a, 17b, 18a, and 18b], and a conveyance side can be made it to carry out a pressure welding with a ***** roller vertical drive (not shown), and it is constituted by the ***** roller rolling mechanism (not shown) pivotable to the document conveyance direction.

[0007] Next, actuation of this example is explained. In this example, a document 3 is conveyed up to a sensor 12 and 13 locations, and the amount of inclinations of a document 3 is measured by sensors 12 and 13. Then, the left end of a document 3 is among the left end detection sensors 11a and 11b, and, as for the case below the set point (value finally demanded by inclination correction), the amount of

inclinations conveys a document as it is. Moreover, by the amount of inclinations sagging a document between two drive rollers, if it is the range (value set up beforehand) which can correct an inclination By stopping drive roller 17a and reversing drive roller 17b, after carrying out constant-rate backward feed of the document 3, without operating a ***** roller Sag a document 3 between drive roller 17a and 17b, a document tip is made to contact the tabling section of drive roller 17b and pressure-roller 18b, and inclination correction is made. Then, a document 3 is conveyed. At this time, the amount of inclinations is further measured by sensors 12 and 13, when larger than the set-up amount of inclinations, a document 3 makes it bend and the count retry of the actuation of fixed may be carried out. Moreover, when there is no conveyed document 3 between left end detection sensor 11a and 11b, or when the amount of inclinations is larger than the above, the ***** roller 9 is set as the inclination of a fixed angle to the document conveyance direction, and a pressure welding is carried out to a document 3, and it conveys until a document 3 results between left end detection sensor 11a and 11b. The setting angle of the ***** roller 9 at this time is an angle beforehand set up to the inclination of a document 3, and is set as the angle which makes the amount of inclinations of a document 3 small. By this actuation, the document with a large inclination can be made below into a fixed angle, and makes inclination correction like the above between two drive rollers after this.

[0008] Drawing 3 and drawing 4 are the plans and side elevations of an inclination corrector style of a document in the 2nd example of this invention. In the 1st example, although the sensor performed ***** positioning by the side of a left end, in this example, the left end datum level 20 shown in drawing 3 is formed, a document 3 may be pushed against the left end datum level 20, and the inclination correction with the ***** roller 9 may be made. Moreover, if it is more than the amount of inclinations that measured the amount of inclinations of a document 3 and was beforehand set up by sensors 12 and 13 after carrying out the ***** roller 9 in the document conveyance direction and the direction of a right angle and pressing against the left end datum level 20 first at the time of the inclination correction with the ***** roller 9 The ***** roller 9 is rotated to the document conveyance direction and a parallel direction, and after making the amount rotation of setup of the ***** roller 9 carry out in the direction in which the amount of inclinations becomes small according to an inclination, an inclination is corrected between two drive rollers. When pressing a document 3 against the left end datum level 20, and the length of a document 3 is detected, and the ***** roller 9 carries out a pressure welding and conveys in the center of document length, it is possible to make small inclination generating at the time of *****.

[0009] In addition, in the above-mentioned example, since the angle and rotation of the ***** roller 9 for correcting the inclination of a document 3 change according to physical conditions, such as magnitude of a document, and thickness, if they set up according to the class of document, the always proper inclination correction of them will be attained. Since the equipment incorporating this device is equipment which performs automatic feeding alternatively from two or more hoppers, specifically, it should just register the angle and rotation of the ***** roller 9 to the inclination of the document for every hopper. By correcting this registered value according to the flow chart shown in drawing 5, the drive conditions of the always proper ***** roller 9 are acquired. That is, after performing ***** with the ***** roller 9, the amount of inclinations of a document 3 is again measured by sensors 12 and 13 (steps 501-503), and when the close amount of inclinations is not in a reference value, what applied to the drive conditions of (NO of step 504) and a current ***** roller the rotation of the ***** roller equivalent to correcting the amount of inclinations measured newly and the angle is made into the drive conditions of a new ***** roller (step 504).

[0010]

[Effect of the Invention] According to this invention, inclination correction of high degree of accuracy can be made on stability to the document conveyed with the big inclination.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the plan of the inclination corrector style of the document in the 1st example of this invention.

[Drawing 2] It is the side elevation of drawing 1.

[Drawing 3] It is the plan of the inclination corrector style of the document in the 2nd example of this invention.

[Drawing 4] It is the side elevation of drawing 3.

[Drawing 5] It is the flow chart which shows the drive condition correction method of the ***** roller in one example of this invention.

[Description of Notations]

1a, 1b, 2, 3a, a 3b:form guide, 3:document, and 9:piece -- bringing near -- a roller, 11a, 11b and 12, 13:sensor, 17a, a 17b:drive roller, 18a, a 18b:pressure roller, and 20:left end datum level.

[Translation done.]

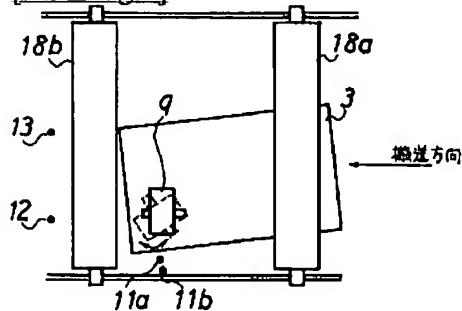
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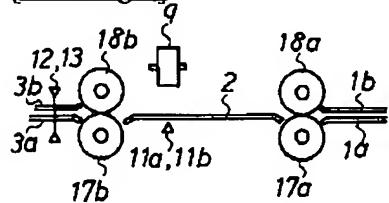
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DRAWINGS

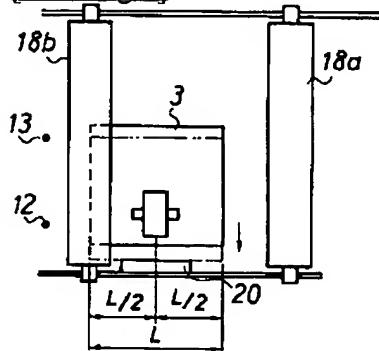
[Drawing 1]



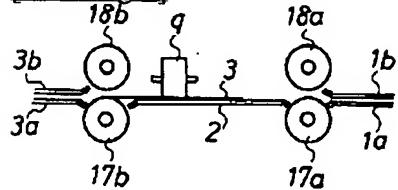
[Drawing 2]



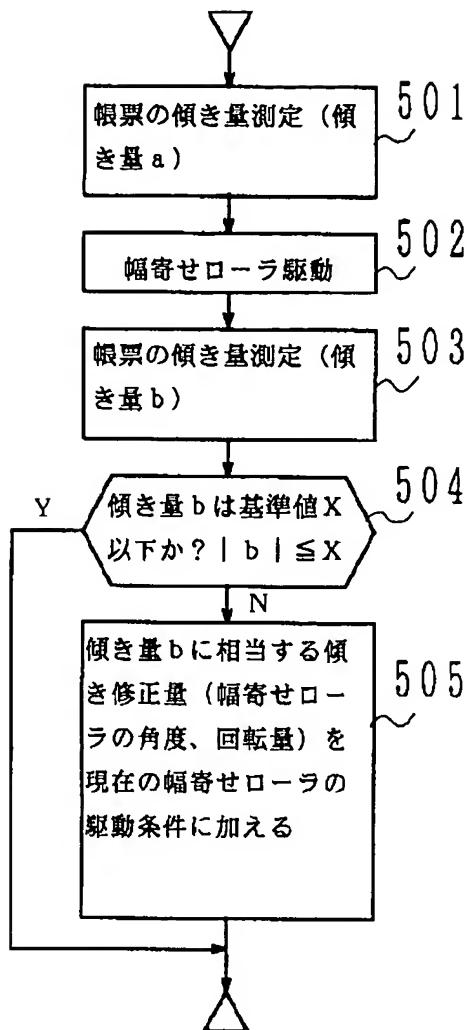
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Translation done.]